

【CLAIMS】

【Claim 1】

A gas concentrator, which produces concentrated gas by applying a pressure difference to adsorbent having selective adsorption property to specific gas from mixed gas
5 and by separating the specific gas, comprising:

a filter for filtering out impurities from the mixed gas;

a plurality of adsorption beds containing the adsorbent for separating the specific gas from the mixed gas supplied via the filter and including a backflow prevention means formed on channels through which the separated gas is discharged therefrom;

10 a small pipe for interconnecting the channels at production stages of the adsorption beds with each other to perform processes of cleaning and applying vacuum pressure to the adsorption beds;

a vacuum pumping means connected to a channel for supplying the mixed gas to the adsorption beds, the vacuum pumping means generating the pressure difference caused
15 from a difference between the a vacuum pressure and a pressure of the mixed gas;

a valve means comprising a channel base of a single body formed with channels respectively connected to the adsorption beds, the channel for supplying the mixed gas, and the vacuum pumping means, and solenoid drivers mounted in the channel base for switching the channels formed in the channel base in order to alternately apply the vacuum
20 pressure and the pressure of the mixed gas to the adsorption beds; and

a gas supplying means for controllably supplying the mixed gas supplied from the filter to the gas separated and produced from the adsorption beds and then supplying a target space with the gas of which flow rate and concentration is controlled.

25 【Claim 2】

The gas concentrator as claimed in claim 1, wherein the channel base, which is formed in the single body formed with the channels, is formed with mounting portions for mounting the solenoid drivers, bed connecting portions to be connected to the adsorption beds, and a channel connecting portion to be connected to the channel for supplying the
30 mixed gas.

【Claim 3】

5 The gas concentrator as claimed in claim 2, wherein the solenoid driver comprises a frame for supporting the whole of the driver; a coil housed in the frame for providing a motive force by a current supplied; a plunger for opening and closing the channel through its reciprocation by the motive force of the coil; a guide pipe for guiding the plunger; and a pumping means connecting portion extended on the guide pipe.

【Claim 4】

10 The gas concentrator as claimed in any one of claims 1 to 3, wherein the channel base is inserted into and engaged with the adsorption beds by a cap attaching manner.

【Claim 5】

15 The gas concentrator as claimed in any one of claims 1 to 3, wherein the backflow prevention means formed on the respective channels for discharging the gas separated from the adsorption beds is a check valve or small flow rate reduction pipe with flow resistance.

【Claim 6】

20 The gas concentrator as claimed in claim 5, wherein the check valve comprises an outer guide formed on the channel; a check plunger inserted in the outer guide, a body of the check plunger being formed with the channel; a sealing damper attached to the check plunger so as to be in close contact with an inlet of the outer guide of a portion where the gas flows in; and a supporting spring positioned at an outlet of the outer guide of a portion where the gas is discharged to support the check plunger.

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【Claim 7】

The gas concentrator as claimed in claim 1, wherein a sealing means for preventing backflow of the discharged gas separated and discharged from the adsorption beds and simultaneously blocking off external air is installed on the channel.

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【Claim 8】

The gas concentrator as claimed in claim 1, wherein a sealing means for blocking off external air is installed on a suction or discharge channel of the vacuum pumping means.

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【Claim 9】

The gas concentrator as claimed in claim 7 or 8, wherein the sealing means is a check valve type.

10 【Claim 10】

The gas concentrator as claimed in any one of claims 1 to 3, wherein the gas supplying means supplies the target space with the gas of which the flow rate and concentration is controlled by using a flow rate control means installed on a channel for controlling flow rate of the gas discharged through the adsorption beds and a flow rate control means installed on a channel for supplying the mixed gas which has not passed through the adsorption beds.

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